



MILESTONE EXAMINATIONS BOARD

PRE-PLE (Item 1 of 4)

2024

MATHEMATICS

Time Allowed: 2 hours 30 minutes

Random No.	Personal No.
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Candidate's Name: TR. JOHN LUYOMBO

Candidate's Signature: 0777-943404 // 07514-88579

District ID No.

Read the following instructions carefully:

1. Do not write your school or district name anywhere on this paper.
2. This paper has two sections: A and B. Section A has 20 questions and section B has 12 questions. The paper has 15 printed pages altogether.
3. Answer all questions. All answers to both sections A and B must be written in the spaces provided.
4. All answers must be written using a blue or black ball point pen or ink. Any answer or work written in pencil other than drawings will not be marked.
5. No calculators are allowed in the examination room.
6. Unnecessary changes in your work and handwriting that cannot be read easily may lead to loss of marks.
7. Do not fill anything in the table indicated: "FOR EXAMINERS' USE ONLY" and boxes inside the question paper.

FOR EXAMINERS' USE ONLY		
QN. NO.	MARKS	EXR'S NO.
1-5		
6-10		
11-15		
16-20		
21-22		
23-24		
25-26		
27-28		
29-30		
31-32		
TOTAL		

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Turn Over

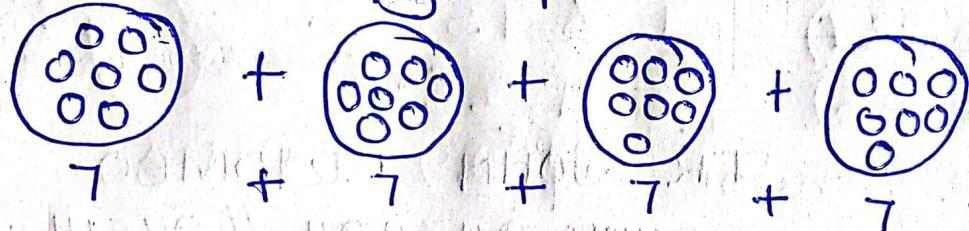
SECTION A: 40 MARKS

Answer **all** questions in this section.

Questions **1** to **20** carry two marks each.

1. Work out: 4×7 .

4×7 means 4 groups of 7s.



2. Set $P = \{Kintu, \underline{Okoboi}, Nambi, \underline{Musitwa}\}$ and $Q = \{\underline{Okoboi}, \underline{Musitwa}, Kantono, Nakawala\}$. Find $P \cap Q$.

$$\underline{P \cap Q = \{\underline{Okoboi}, \underline{Musitwa}\}}$$

3. Find the number whose standard form is 6.15×10^{-2} .

$$\begin{aligned}
 6.15 \times 10^{-2} &= 6.15 \times \frac{1}{100} \\
 &= \frac{6.15}{100} \times \frac{1}{100} \\
 &= \frac{6.15}{10000} \\
 &= 0.0615
 \end{aligned}$$

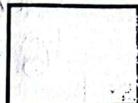
4. At birth, Mariam weighed 4.24kg. How many grams did Mariam weigh?

$$\begin{aligned}
 1\text{kg} &= 1000\text{g} \\
 4.24\text{kg} &= (4.24 \times 1000)\text{g} \\
 &= \left(\frac{424}{100} \times 1000\right)\text{g} \\
 &= \underline{\underline{4240\text{g}}}
 \end{aligned}$$

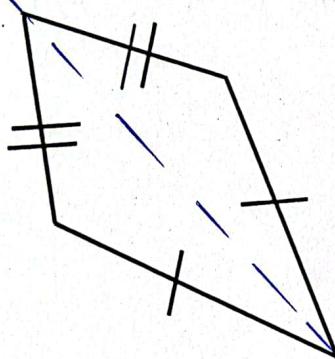
5. Change 25_{ten} to binary base.

B	No	R
2	25	1
2	12	0
2	6	0
2	3	1

$$25_{\text{ten}} = 11001_{\text{two}}$$



6. How many lines of folding symmetry has the figure below?



One line of folding symmetry.

7. A girl fetched 60 litres of water in the morning and 72 litres in the evening. Find the capacity of the biggest container the girl used in both instances.

GCF of 60 and 72

2	60	72
2	30	36
3	15	18
	5	6

$$2 \times 2 \times 3$$

$$4 \times 3$$

12 litres container

8. Calculate the square root of 0.25.

$$\begin{aligned} 0.25 &= \frac{25}{100} \\ &= \sqrt{\frac{25}{100}} \\ &= \frac{5}{10} \\ &= 0.5 \end{aligned}$$

3

Turn Over

9. Given that $627k$ is a four digit number which is divisible by 9, find the digit represented by k .

A number is said to divisible by 9 if the sum of its digit is divisible by 9.

$$6 + 2 + 7 + k = 15 + k.$$

$$\frac{15}{9} = 1 \text{ rem } 6$$

To make $(15+k) \div 9$
 (k) must be 3
 $15+k = 15+3 = 18$
 $18 \div 9 = 2$ (no rem)

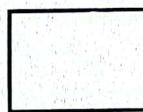
Therefore the digit k is 3.

10. Write LXIII in words.

LX	III	LXIII
60	3	63

$$\therefore LXIII = 63$$

Sixty three



11. Moses started his journey at 11:36am and reached his destination at 12:10pm. How long was the journey?

Duration = Ending time - Starting time

34 minutes

$$\begin{array}{r}
 12:60 \\
 - 11:36 \\
 \hline
 34
 \end{array}$$

12. Find the value of $(3^3 + 8^0) \times 7^1$.

$$(3^3 + 8^0) \times 7^1$$

$$(3 \times 3 \times 3 + 1) \times 7$$

$$(27 + 1) \times 7$$

$$28 \times 7$$

$$196$$

3. 8 builders take 10 days to complete a house. How many builders are needed to complete the house in only 5 days?

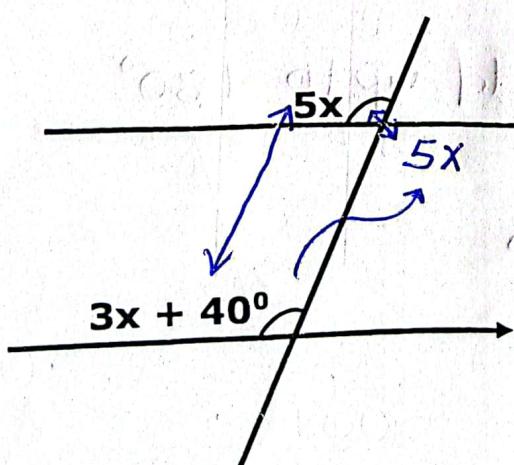
$$\begin{aligned}
 & | 8 \text{ builders} - 10 \text{ days} \\
 & | 1 \text{ builder} = (10 \times 8) \text{ days} \\
 & | = 80 \text{ days} \\
 & | \text{How builders are to complete} \\
 & | \text{the house in only 5 days} \\
 & | = \frac{(80 \text{ days})}{5 \text{ days}} \text{ builders} \\
 & | = 16 \text{ builders.}
 \end{aligned}$$

14. The average mass of 6 students was 63kg. When one student left the group, the average mass of the remaining student became 64Kg . What was the mass of the sixth student?

$$\begin{aligned}
 & | \text{Av mass of 6 students} = 63 \text{ kg.} \\
 & | \text{Av mass of 5 students} = 64 \text{ kg} \\
 & | \text{T. Mass of 6 students} = (63 \times 6) \\
 & | = 378 \\
 & | \text{T. Mass of 5 students} = 64 \times 5 \\
 & | = 320
 \end{aligned}$$

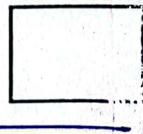
$$\begin{aligned}
 & | \text{T. Mass of 6 student} \\
 & | = \text{T Mass of} \\
 & | 6 \text{ Student} - \text{Tma} \\
 & | \text{ef 5 student} \\
 & | = 378 - 320 \\
 & | = 58 \text{ kg}
 \end{aligned}$$

15. Find the value of x in degrees.



① $5x$ and $3x + 40^\circ$ they are corresponding angles
 ② $5x$ and $3x + 40^\circ$ they are alternating angles.

$$\begin{aligned}
 5x &= 3x + 40^\circ \\
 5x - 3x &= 40^\circ \\
 \frac{2x}{2} &= \frac{40}{2} \\
 x &= 20^\circ
 \end{aligned}$$



16. Find the next two numbers in the sequence.

$$0.1, 0.4, 0.2, 0.5, 0.3, \underline{0.6}, \underline{0.4}$$

$+0.3$ -0.2 $+0.3$ -0.2 $+0.3$ -0.2

17. Given that $m = 6$, $n = 5$ and $p = 4$, find the value of $\frac{m(n-1)}{p}$.

$$\frac{m(n-1)}{p}$$

$$\frac{6(5-1)}{4}$$

$$\frac{(6 \times 5) - (6 \times 1)}{4}$$

$$\frac{30 - 6}{4}$$

$$\frac{24}{4}$$

$$\therefore \frac{m(n-1)}{p} = \underline{\underline{6}}$$

18. Using a ruler, a pencil and a pair of compasses only, construct a supplementary angle of 105° .

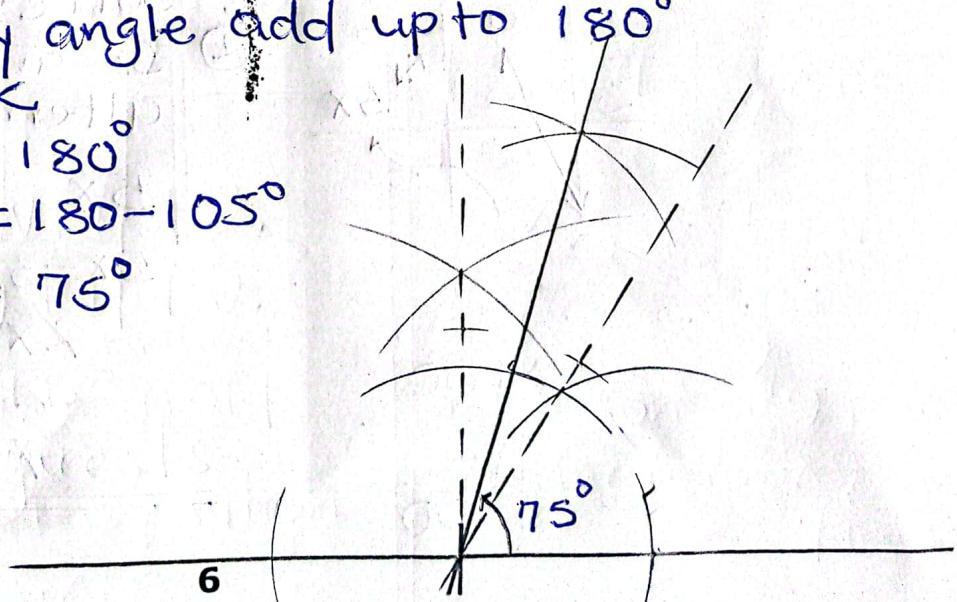
Supplementary angle add upto 180°

Let the \angle be K

$$K + 105^\circ = 180^\circ$$

$$K + 105^\circ - 105^\circ = 180^\circ - 105^\circ$$

$$K = 75^\circ$$



19. In a P.7 class, there are 33 boys and 21 girls. Find the probability of selecting a girl as a head prefect.

$$\text{Probability} = \frac{\text{no of event}}{\text{no of sample space}}$$
$$= \frac{21}{33+21}$$

$$\text{Probability} = \frac{21}{54} \approx \frac{7}{18}$$

20. Workout:

Weeks	Days
54	72
- 2	5
<u>2</u>	<u>4</u>

$$9 - 5 = 4$$

$$4 - 2 = 2$$

SECTION B: 60 MARKS

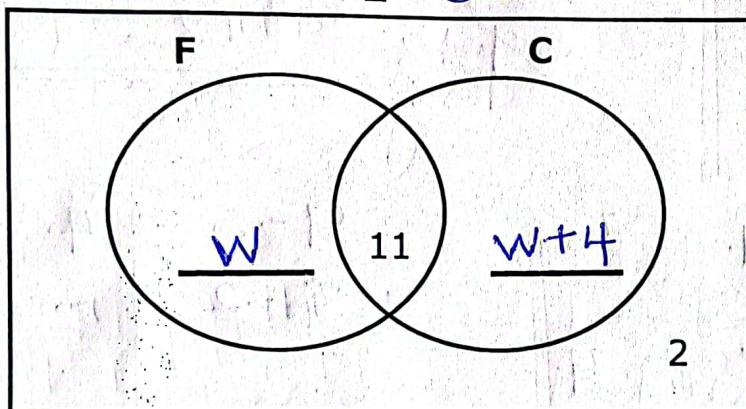
Answer all questions in this section.

Marks for each question are indicated in brackets.

21. During the 30th Joshi mother's birthday party, w guests ate Fish (F) only, (w+4) ate Chicken (C) but not fish. 11 guests ate both types of sauce while 2 did not eat any of the sauce.

- (a) Complete the Venn diagram below. (02 marks)

$$\Sigma = 35$$



- (b) If 22 guests ate only one type of sauce, find the value of w.

$$w + w + 4 + 11 = 22 \quad (02 \text{ marks})$$

$$2w + 4 - 4 = 22 - 4$$

$$\frac{2w}{2} = \frac{18}{2}$$

$$w = 9$$

- (c) How many guests attended the party? (01 mark)

$$w + 11 + w + 4 + 2$$

$$9 + 11 + 9 + 4 + 2$$

$$20 + 15$$

35 guests.

22. (a) Find the quotient of the value of 9 and the value of 5 in 49056.

Quotient is a number got after dividing. (03 marks)

$$\begin{array}{r}
 149056 \\
 \boxed{1} \quad \boxed{4} \quad \boxed{9} \quad \boxed{0} \quad \boxed{5} \quad \boxed{6} \\
 \hline
 5 \times 10 = 50 \\
 9 \times 1000 = 9000 \\
 \hline
 = \frac{9000}{50} = 180
 \end{array}$$

(b) How many groups of 100 are in the value of 7 in 87130? (02 marks)

$$\begin{array}{r}
 87130 \\
 \boxed{1} \quad \boxed{4} \quad \boxed{9} \quad \boxed{0} \\
 \hline
 7 \times 1000 \\
 \left(\frac{7000}{100} \right) \text{ groups}
 \end{array}$$

700 groups of 100.

23. (a) Work out:

$$\frac{1.8 \times 3.9}{0.9 \times 1.3}$$

(03 marks)

$$\begin{aligned}
 & \frac{1.8 \times 3.9}{0.9 \times 1.3} \\
 & \left(\frac{1.8 \times 3.9}{0.9 \times 1.3} \right) \div \left(\frac{0.9 \times 1.3}{0.9 \times 1.3} \right) \\
 & \left(\frac{18}{10} \times \frac{39}{10} \right) \div \left(\frac{9}{10} \times \frac{13}{10} \right)
 \end{aligned}$$

$$\begin{aligned}
 & \frac{2}{10} \times \frac{3}{10} \times \frac{10}{9} \times \frac{10}{13} \\
 & 2 \times 3 \\
 & \underline{\underline{6}}
 \end{aligned}$$

(b) Simplify:

$$\frac{3}{4} - \frac{1}{2} + \frac{1}{3}$$

(03 marks)

$$\frac{3}{4} - \frac{1}{2} + \frac{1}{3}$$

Following BODMAS

$$\left(\frac{3}{4} + \frac{1}{3} \right) - \frac{1}{2}$$

$$\begin{aligned}
 & \frac{9+4}{12} - \frac{1}{2} \\
 & \frac{13}{12} - \frac{1}{2} \\
 & \frac{13-6}{12} = \frac{7}{12}
 \end{aligned}$$

24. Mr. Magezi fixed twenty two poles round his circular fish pond in Mugavu village.

(a) Find the diameter of the pond if the interval between the poles was 6 metres. (Use $\pi = 22$) (03 marks)

$$C = \pi D \quad 7$$

But $C = \text{No of poles} \times \text{interval b/w}$

$$= 22 \times 6$$

$$C = 132\text{m}$$

Using $C = \pi D$

$$132\text{m} = \frac{22}{7} \times D$$

$$\cancel{22D} = 132 \times 7$$

$$\frac{22D}{22} = \frac{924}{22}$$

$$D = 42\text{m.}$$

(b) Calculate the area of the pond. (02 marks)

$$\text{Area} = \pi r^2$$

$$\text{But } r = \frac{D}{2}$$

$$r = \frac{42}{2}$$

$$r = 21$$

$$A = \pi r^2$$

$$= \frac{22}{7} \times \frac{3}{2} \times 21^2$$

$$= 66 \times 21$$

$$A = 1386\text{m}^2$$

25. A father is six times as old as his son. In 6 years' time, he will be four times as old as his son. How old is each of them?

Let son's age now be x

TIME	SON	FATHER
NOW,	x	$6x$
6 yrs	$x+6$	$6x+6$

But remember, in 6 year's time the father will be 4 times as old as his son.
Forming an equation

$$4(x+6) = 6x+6$$

10

(04 marks)

$$4x + 24 = 6x + 6$$

$$4x - 6x = 6 - 24$$

$$\frac{-2x}{-2} = \frac{18}{2}$$

$$x = 9$$

So the son is 9 years
The father is 6×9

$$= 54 \text{ years}$$

26. The table below shows Mugabi's monthly expenditure.

Item	Rent	Clothing	Food	Fees
Percentage	30%	35%	x	20%

(a) Find the value of x.

(02 marks)

$$x + 30\% + 35\% + 20\% = 100\%$$

$$x + 85\% = 100\%$$

$$x + 85\% - 85\% = 100\% - 85\%$$

$$x = 15\%$$

(b) Construct an accurate pie-chart to show Mugabi's monthly

expenditure (Use radius of 4cm). (03 marks)

Convert % into degrees.

Rent

$30\% \text{ of } 360^\circ$

$\frac{30}{100} \times 360$

108°

Clothing

$35\% \text{ of } 360^\circ$

$\frac{35}{100} \times 360^\circ$

126°

Food

$15\% \text{ of } 360^\circ$

$\frac{15}{100} \times 360$

54°

Fees

$20\% \text{ of } 360^\circ$

$\frac{20}{100} \times 360$

72°

Check

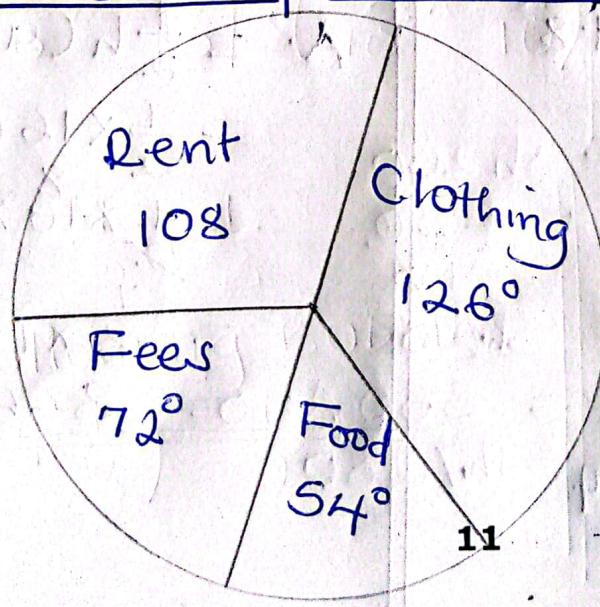
108

126

54

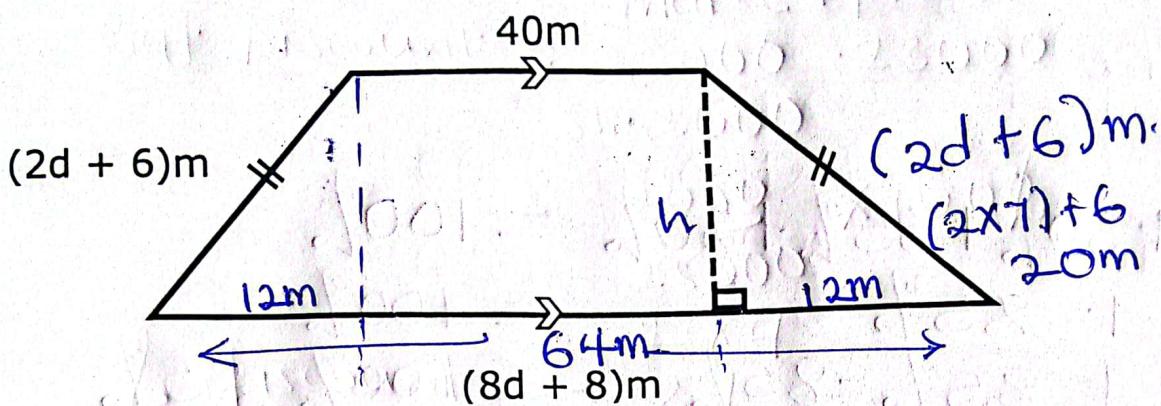
72

360



Turn Over

27. The shape below is a plot of land for Mr. Wambuzi. Study it and use it to answer questions that follow.



- (a) If the perimeter of the distance round the plot is 144 meters, find the value of d . (02 marks)

$$S_1 + S_2 + S_3 + S_4 = P$$

$$2d + 6 + 8d + 8 + 2d + 6 + 40 = 144 \text{ m}$$

$$2d + 8d + 2d + 6 + 8 + 6 + 40 = 144 \text{ m}$$

$$12d + 60 = 144 \text{ m}$$

$$12d + 60 - 60 = 144 - 60 \text{ m}$$

$$\frac{12d}{12} = \frac{84}{12} \text{ m}$$

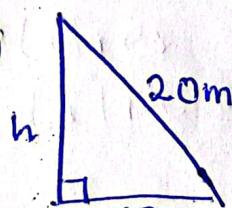
$$d = 7 \text{ m}$$

- (b) Work out the area of the plot. (03 marks)

$$8d + 8 = (8 \times 7) + 8$$

$$64$$

Using



$$a^2 = c^2 - b^2$$

$$a^2 = 20^2 - 12^2$$

$$a^2 = 400 - 144$$

$$\sqrt{a^2} = \sqrt{256}$$

$$a = 16$$

$$\text{so } h = 16 \text{ m}$$

$$A = \frac{1}{2} h(a+b)$$

$$= \frac{1}{2} \times 16 (40 + 64)$$

$$= \frac{1}{2} \times 16 \times 104$$

$$= 8 \times 104$$

$$= 864 \text{ m}^2$$

12

28. Muubi sold a radio set to Bota for sh 60,000 making a profit of 20%.
 Bota then sold the same radio set to Tenge making a loss of 15%.
 (a) How much did Muubi buy the radio set? (03 marks)

Let the buy price be q .

$$\frac{100+20}{100} \text{ of } q = 60000$$

100

$$\frac{120q}{100} \times 100 = 60000 \times 100$$

$$\frac{120q}{120} = \frac{6000000}{120}$$

$$q = 50000$$

so Muubi bought
a radio set at
sh. 50,000.

- (b) Calculate the loss made by Bota. (02 marks)

$$\text{Loss made} = \frac{\% \text{ loss}}{100\%} \times \text{Buying Price}$$

$$= \frac{15}{100} \times 60000$$

$$\text{Loss made} = \text{Sh. } 9000$$

29. Otim bought the following items in the table below from Mrs. Nakako's shop in Nakawa.

- (a) Complete the table above. (04 marks)

Item	Quantity	Unit cost	Total cost
Cooking oil	$\frac{1}{4}$ litres	sh 8,800	sh 2,200
Sugar	$\frac{4}{4}$ kg	sh 4,800	sh 19,200
Salt	$1\frac{1}{2}$ kg	sh 2400	sh 3,600
Total Expenditure			sh 25,000

Cooking oil.

$$\text{Qn} = \frac{\text{TC}}{\text{U.C}}$$

$$= \left(\frac{2200}{8800} \right) L$$

$$= \frac{1}{4} L$$

Salt

$$\text{U.C} = \frac{\text{TC}}{Q}$$

$$= \frac{3600}{1\frac{1}{2}}$$

$$= 3600 \div \frac{3}{2}$$
 ~~$= 13 \cdot 3600 \times \frac{2}{3}$~~

$$= 2400$$

Sugar

$$\text{TC} = 25000 - (2200 + 3600)$$

$$= 25000 - 5800$$

$$= \text{Sh. } 19200$$

$$\text{Qn} = \frac{\text{TC}}{\text{Unit}} = \frac{19200}{4800}$$

$$= 4 \text{ kg}$$

Turn Over

(b) If he paid sh 23,000, calculate the percentage discount.

$$\% \text{ discount} = \frac{\text{Discount}}{\text{Marked price}} \times 100\% \quad (02 \text{ marks})$$

$$\text{But Discount} = \frac{25000 - 23000}{25000} \times 100\%$$

$$= \frac{2000}{25000} \times 100\%$$

$$\begin{aligned}\% \text{ discount} &= 2 \times 4 \\ &= 8\%\end{aligned}$$

30. A school tank is $\frac{3}{4}$ full of water. When 30 litres are removed by the cook it becomes $\frac{2}{3}$.

(a) How many litres does the tank hold when it is completely full?

$$\begin{aligned}\text{Removed fraction} &= \frac{3}{4} - \frac{2}{3} \\ &= \frac{9 - 8}{12} \\ &= \frac{1}{12}\end{aligned} \quad (03 \text{ marks})$$

$$\begin{aligned}\frac{P}{12} \times 12 &= 30 \times 12 \\ P &= 360 \text{ L}\end{aligned}$$

So, we let the total litres be P .

$$\frac{1}{12} \text{ of } P = 30 \text{ L}$$

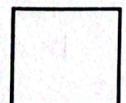
(b) If 10 litres costs sh 200, how much will the tank cost when it's completely full? (02 marks)

$$\text{If 10 litres} = \text{sh 200.}$$

$$1 \text{ Litre} = \frac{200}{10}$$

$$\text{sh.} 20$$

$$\begin{aligned}360 \text{ litres} &= 360 \times 20 \\ &= \text{sh.} 7200\end{aligned}$$



1. A fruit vendor bought some oranges from a village fruit farmer. When she grouped them in heaps of 8, 5 oranges remained, when she put them in heaps of 7, only one orange remained and when she grouped them in heaps of 6, 5 oranges were left. How many oranges did the vendor buy from the farmer? (04 Marks)

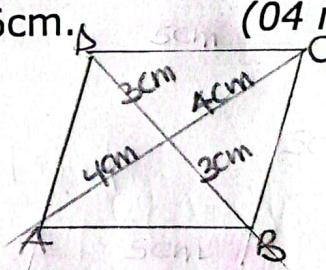
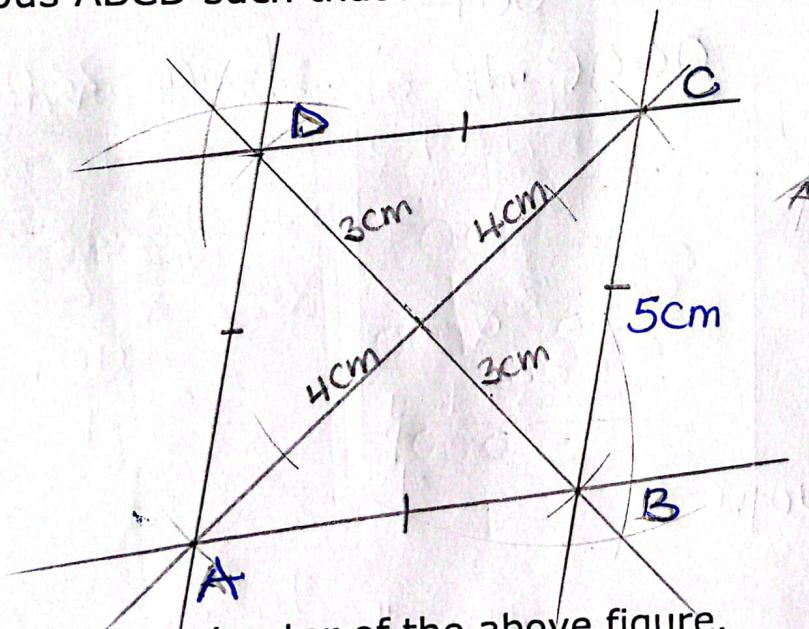
$$S(\text{finite } 8) = \{5, 13, 21, 29, 37, \dots\}$$

$$I(\text{finite } 7) = \{1, 8, 15, 22, 29, 36, \dots\}$$

$$S(\text{finite } 6) = \{5, 11, 17, 23, 29, 35, \dots\}$$

The vendor ^{bought} ~~bought~~ 29 oranges

32. (a) Using a pair of compasses, ruler and a pencil only, construct a rhombus ABCD such that AC=8cm and BD=6cm. (04 marks)

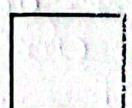


(b) Find the perimeter of the above figure.

(01 mark)

$$\begin{aligned} P &= ST + ST + ST \\ &= 5\text{cm} + 5\text{cm} + 5\text{cm} + 5\text{cm} \end{aligned}$$

$$P = 20\text{cm}$$



END